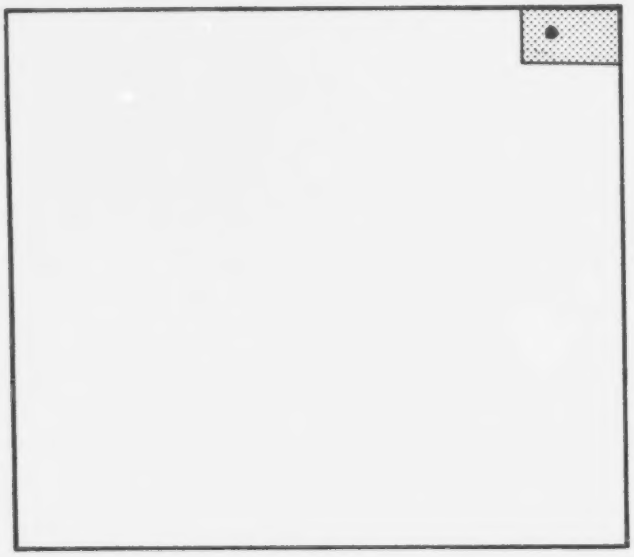
FLOOD INSURANCE STUDY

TOWN OF SEDGWICK, COLORADO
SEDGWICK COUNTY



AUGUST 3, 1989

Federal Emergency Management Agency

COMMUNITY NUMBER - 080171

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. Please contact the community repository for any additional data.

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FLOOD INSURANCE STUDY
TOWN OF SEDGWICK, SEDGWICK COUNTY, COLORADO

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Sedgwick, Sedgwick County, Colorado, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

This Flood Insurance Study was prepared by compiling pertinent information for the flood hazard areas in the Town of Sedgwick, Colorado, from existing technical and/or scientific data originally prepared by others for purposes other than the NFIP. This existing data was reviewed by the Federal Emergency Management Agency (FEMA) prior to its use in the development of this Flood Insurance Study to ensure compliance with NFIP accuracy requirements.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by the U.S. Army Corps of Engineers, Omaha District. These analyses were completed in June 1977.

1.3 Coordination

On September 1, 1988, the results of this study were reviewed and accepted at a final coordination meeting attended by representatives of the community and FEMA.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Sedgwick, Colorado. The area of study is shown on the Vicinity Map (Figure 1).

The area studied by detailed methods was selected based upon the extent and validity of available existing hydrologic and hydraulic data.

Flooding from the South Platte River was studied by detailed methods within the Town of Sedgwick.

2.2 Community Description

The Town of Sedgwick in west-central Sedgwick County, Colorado, is located approximately 5 miles south of the Nebraska state boundary and approximately 24 miles west of the western Nebraska state boundary. According to 1980 census data, Sedgwick has a population of 258, an increase of approximately 20 percent from the 1970 census (Reference 1). The average annual precipitation is approximately 17 inches. The topography of Sedgwick is generally a mildly sloping terrain within the town and rolling hills to the north and south surrounding the town.

2.3 Principal Flood Problems

Flooding along the South Platte River in the Town of Sedgwick normally occurs from March through September with the most frequent flooding occurring during June. Annual peak flood discharges, however, have been recorded throughout the year. Floods in the Town of Sedgwick normally occur under non-ice affected conditions. Ice jams, however, are possible, although historically their frequency of occurrence is rare.

Floodwaters on the South Platte River in the Town of Sedgwick can result from intense localized rainfall or general rains, either of which may be augmented by snowmelt. The intense rainstorm floods result from intense rainfall over areas of relatively small areal extent. These storms can produce extremely rapid concentrations of flood waters and ensuant rapid rises in stream levels. Because there is little warning time prior to streams attaining flood stages, this type of storm can produce floods which are extremely hazardous. This type of flood produces high peak flood discharge on tributaries in the general vicinity of the rainstorm. The flood discharge, however, attenuates rapidly on the South Platte River downstream from the contributing tributaries due to valley storage of the floodwater.

The general rainstorm floods result from rainfall over areas of large areal extent. Rainfall from this type of storm can occur for a period of several days. Because of this time duration, the

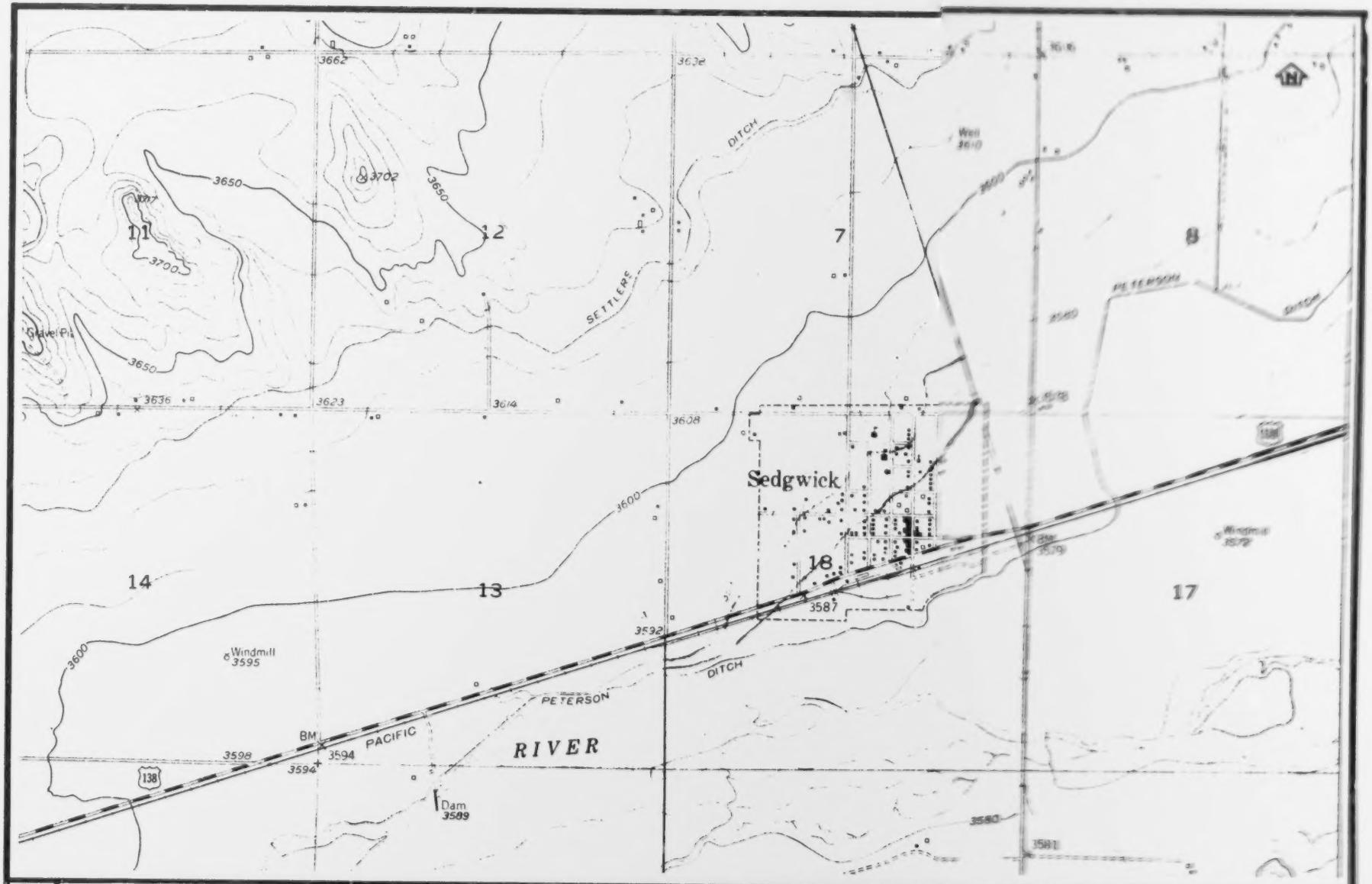

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF SEDGWICK, CO
(SEDGWICK COUNTY)

APPROXIMATE SCALE

2000 0 2000 4000 6000 FEET

VICINITY MAP

affected streams rise relatively slowly over a period of several days. The duration of the flood period can also be of considerable length.

Erosive effects can be considerable in the event of any flood regardless of its origin. Floods resulting from intense rainstorms typically create severe erosion damages in a short period of time due to the floodwater's relatively large peak discharge and high velocity. Typically, erosion damages from snowmelt or general rainstorm floods usually result from prolonged flooding.

2.4 Flood Protection Measures

The Town of Sedgwick presently has no flood protection measures within the corporate limits.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-,and 100-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-,and 100-year floods, have a 10-, 2-, and 1-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied by detailed methods affecting the community.

Peak discharge-drainage area relationships for the South Platte River are shown in Table 1.

TABLE 1. SUMMARY OF DISCHARGES

Flooding Source and Location	Drainage Area (sq. miles)	Peak Discharge (cubic feet per second) 10-Year	50-Year	100-Year	500-Year
South Platte River At Crook, Colorado	19,238	17,000	46,500	68,000	152,000
South Platte River At Julesburg, Colorado	23,138	16,000*	42,500*	61,000*	129,000*

*Decrease in Discharge is Due to the Effects of Valley Storage Along the South Platte River.

3.2 Hydraulic Analyses

An analysis of the hydraulic characteristics of flooding from the riverine source studied was carried out to provide estimates of the elevations of floods of the selected recurrence interval.

Locations of selected cross sections used in the hydraulic analysis are shown on the Flood Profiles (Exhibit 1) and the Flood Insurance Rate Map (FIRM) (Exhibit 2).

Flood profiles were drawn showing the computed water-surface elevation for the flood of the selected recurrence interval.

The hydraulic analysis for this study are based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. For each stream studied by detailed methods, the boundaries of the 100-year floodplain boundary have been delineated using the flood elevation determined at each cross section.

Between cross sections, the boundaries were interpolated using U. S. Geological Survey (USGS) topographic maps at a scale of 1:24,000 with a contour interval of 10 feet, and aerial photographs at an approximate scale of 1:24,000 (References 2 and 3).

The 100-year floodplain boundary is shown on the FIRM (Exhibit 2). On the FIRM, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE). Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. For this Flood Insurance Study, floodways were not computed.

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations (BFEs) or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No BFEs or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100-year floodplain, and locations of selected cross sections used in the hydraulic analysis.

7.0 OTHER STUDIES

This Flood Insurance Study was prepared by compiling existing hydrologic and hydraulic data, and utilized technical and scientific data prepared by other organizations originally for purposes other than the NFIP. The data were identified as the best information available at the time of compilation of this Flood Insurance Study and should depict the general conditions of the flooding sources with relative accuracy. FEMA performed a cursory review and accepted the data as valid for purposes of this Flood Insurance Study and the NFIP. However, if better information is known to exist or has been developed since the date of this Flood Insurance Study, the information should be immediately forwarded to the Natural and Technological Hazards Division, FEMA, Denver Federal Center, Building 710, Box 25267, Denver, Colorado 80225-0267 for consideration in revision of this study.

A Flood Hazard Boundary Map (FHBM) has been published for the community (Reference 4). The differences between the FHBM and this study are justified due to the more detailed nature of this Flood Insurance Study.

This Flood Insurance Study either supersedes or is compatible with all previous data published on streams analyzed in this study and should be considered authoritative for the purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Denver Federal Center, Building 710, Box 25267, Denver, Colorado 80225-0267.

9.0 BIBLIOGRAPHY AND REFERENCES

1. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Number of Inhabitants, Colorado.

2. U.S. Department of the Interior, U.S. Geological Survey, 7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 Feet, Sedgwick, Colorado (1971).

3. U.S. Army Corps of Engineers, Omaha District, Special Flood Hazard Information Report, South Platte River, Volume III, Logan County-Sedgwick County, Colorado, June 1977.

4. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map, Town of Sedgwick, Sedgwick County, Colorado, November 8, 1974.

FLOOD PROFILES

SOUTH PLATTE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF SEDGWICK, CO
(SEDGWICK CO.)

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